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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,510	04/01/2004	Evelyn N. Drake	2003UR021	8615

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EXXONMOBIL UPSTREAM RESEARCH COMPANY
P.O. BOX 2189
(CORP-URC-SW 341)
HOUSTON, TX 77252-2189

EXAMINER	
HUGHES, SCOTT A	

ART UNIT	PAPER NUMBER
3663	

MAIL DATE	DELIVERY MODE
11/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,510	DRAKE ET AL.	
	Examiner	Art Unit	
	Scott A. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *52-86* is/are pending in the application.

4a) Of the above claim(s) *53,62,71,80 and 84* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *52,54-61,63-70,72-79 and 81-86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/9/2007 has been entered.

Response to Arguments

Applicant's arguments filed 8/9/2007 have been fully considered but they are moot in view of the new grounds of rejection presented below. Applicant makes arguments directed against the Zahradnik reference. This reference is not used in the new grounds of rejection presented below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 74 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 74 recites the limitation "wherein the alcohol solvent is ethanol." There is insufficient antecedent basis for this limitation in the claim. Claim 70 recites the limitation "said additive being either undiluted or dissolved in alcohol." Therefore, alcohol is not required because the additive could be undiluted. Claim 74 appears to require that an alcohol solvent be present, but parent claim 70 does not require this and therefore there is a lack of antecedent basis for the limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 52, 54-61, 63-70, 72-79, 81-84, and 85-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens (5959938) in view of (Bernd) and Cosentino (5863501).

With regard to claims 52 and 61, Behrens discloses using air bubbles emitted from a diffuser in water for the purpose of suppressing noise in a marine seismic survey (abstract; Column 1, Line 60 to Column 2, Line 16; Columns 4-5). Behrens teaches that the bubbles should not commingle (coalesce) before reaching the surface. Behrens does not disclose that a chemical additive is used with the bubbles generated to block the acoustic waves. Bernd teaches that it is known in the art of blocking acoustic waves in a marine environment to use chemical additives having bubble coalescence

retardation properties with a bubble diffuser in order to prevent breakdown and dispersal of a bubble, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time (Column 2; Column 3, Line 18 to Column 6, Line 48). It would have been obvious to modify Behrens to include chemical additives as taught by Bernd in order to prevent breakdown and dispersal of the bubble curtain, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time. Bernd discloses mixing the chemical additives in with the water at the time that bubbles are emitted. This requires keeping the chemical and nozzles to emit the chemicals onboard the ship with the rest of the equipment. Cosentino teaches that it is known to use chemical additives having bubble coalescence retardation properties with bubble diffusers (abstract; Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches that the surfactant (chemical additives) can be coated onto the diffuser before use and then be allowed to dry and set (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches applying the chemical additives to the diffuser by flushing the device with the chemical additive, then draining and allowing the chemical additive and diffuser to dry. It would have been obvious to modify Behrens and Bernd to include applying the chemical additive to the diffuser before use and allowing it to dry as taught by Cosentino in order to allow the surfactant to act on the bubbles emitted by the diffuser without having to supply the chemical additive directly into the liquid surrounding the diffuser. Although Cosentino teaches flushing the device with the chemical additive and not applying it with a brush or spraying it onto the

diffuser's surface, using a brush or spraying the chemical would be obvious because it would allow for the diffuser to be coated with surfactant and allowed to dry before use. The chemicals added to the diffuser by brush, spray, or flushing would act in the same way once allowed to dry.

With regard to claims 54 –55 and 63-64, Cosentino teaches that the chemical additive is a polyoxyalkylene) block copolymer composed of EO and PO blocks having the claimed structures and being a pluronic (Column 8, Line 16 to Column 9, Line 30).

With regard to claims 56 and 65, Bernd teaches diluting the additive in a suitable solvent (Column 3, Line 65 to Column 6, Line 48). It would have been obvious to use a solvent to dilute the additive as taught by Bernd in the bubble curtain of Behrens in order to allow the chemical additives to form a film on the bubbles and to control the diffusion of the bubbles so that it stops at a suitable point.

With regard to claim 57 and 66, Cosentino teaches that the diffuser's surface is allowed to set after application of the chemical additive for at least five minutes before use (drying overnight) (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30).

With regard to claims 58 and 67, Behrens discloses that the diffuser is a performed hose made from a polymeric material (Column 2, Lines 55-65).

With regard to claims 59 and 68, Behrens discloses preconditioning the hose by soaking it in water (Columns 23, Lines 55-68). Behrens discloses that the hose expands in water and that the hose has apertures that allow it to produce bubbles while

in water. Since it is soaked in the water and allowed to expand before use, it is preconditioned.

With regard to claims 60 and 69, Bernd discloses recoating the diffuser by adding more chemicals each time it is to be used (Columns 2-5). It would be obvious to recoat the diffuser in order to have enough chemical additives present to affect the bubbles emitted during subsequent uses.

With regard to claim 70, Behrens discloses using air bubbles emitted from a diffuser in water for the purpose of suppressing noise in a marine seismic survey (abstract; Column 1, Line 60 to Column 2, Line 16; Columns 4-5). Behrens teaches that the bubbles should not commingle (coalesce) before reaching the surface. Behrens does not disclose that a chemical additive is used with the bubbles generated to block the acoustic waves. Bernd teaches that it is known in the art of blocking acoustic waves in a marine environment to use chemical additives having bubble coalescence retardation properties with a bubble diffuser in order to prevent breakdown and dispersal of a bubble, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time; said chemical additive being either undiluted or dissolved in alcohol (Column 2; Column 3, Line 18 to Column 6, Line 48). It would have been obvious to modify Behrens to include chemical additives as taught by Bernd in order to prevent breakdown and dispersal of the bubble curtain, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time. Bernd discloses mixing the chemical additives in with the water at the time that bubbles are emitted. This requires keeping the chemical and nozzles to emit

the chemicals onboard the ship with the rest of the equipment. Cosentino teaches that it is known to use chemical additives having bubble coalescence retardation properties with bubble diffusers (abstract; Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches that the surfactant (chemical additives) can be coated onto the diffuser before use and then be allowed to dry and set (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches applying the chemical additives to the diffuser by flushing the device with the chemical additive, then draining and allowing the chemical additive and diffuser to dry. It would have been obvious to modify Behrens and Bernd to include applying the chemical additive to the diffuser before use and allowing it to dry as taught by Cosentino in order to allow the surfactant to act on the bubbles emitted by the diffuser without having to supply the chemical additive directly into the liquid surrounding the diffuser. Although Cosentino teaches flushing the device with the chemical additive and not applying it by dunking in a container the contents of which are the chemical additive, the process of flushing or dunking both achieve the same result of immersing the device in the chemical solvent and it would have been obvious to use dunking instead of flushing. The chemicals added to the diffuser by dunking or flushing would act in the same way once allowed to dry.

With regard to claims 72-73, Cosentino teaches that the chemical additive is a poly(oxyalkylene) block copolymer composed of EO and PO blocks having the claimed structures and being a pluronic (Column 8, Line 16 to Column 9, Line 30).

With regard to claims 74, Bernd teaches that the alcohol solvent is ethanol (Column 3, Line 65 to Column 6, Line 48). It would have been obvious to use a solvent to dilute the additive as taught by Bernd in the bubble curtain of Behrens in order to allow the chemical additives to form a film on the bubbles and to control the diffusion of the bubbles so that it stops at a suitable point.

With regard to claim 75, Cosentino teaches that the diffuser's surface is allowed to set after application of the chemical additive for at least five minutes before use (drying overnight) (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30).

With regard to claim 76, Behrens discloses that the diffuser is a performed hose made from a polymeric material (Column 2, Lines 55-65).

With regard to claim 77, Behrens discloses preconditioning the hose by soaking it in water (Columns 23, Lines 55-68). Behrens discloses that the hose expands in water and that the hose has apertures that allow it to produce bubbles while in water. Since it is soaked in the water and allowed to expand before use, it is preconditioned.

With regard to claim 78, Bernd discloses recoating the diffuser by adding more chemicals each time it is to be used (Columns 2-5). It would be obvious to recoat the diffuser in order to have enough chemical additives present to affect the bubbles emitted during subsequent uses.

With regard to claim 79, Behrens discloses using air bubbles emitted from a diffuser in water for the purpose of suppressing noise in a marine seismic survey (abstract; Column 1, Line 60 to Column 2, Line 16; Columns 4-5). Behrens teaches that

the bubbles should not commingle (coalesce) before reaching the surface. Behrens does not disclose that a chemical additive is used with the bubbles generated to block the acoustic waves. Bernd teaches that it is known in the art of blocking acoustic waves in a marine environment to use substantially water-insoluble chemical additives having bubble coalescence retardation properties with a bubble diffuser in order to prevent breakdown and dispersal of a bubble, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time; said chemical additive being either undiluted or dissolved in alcohol (Column 2; Column 3, Line 18 to Column 6, Line 48). It would have been obvious to modify Behrens to include chemical additives as taught by Bernd in order to prevent breakdown and dispersal of the bubble curtain, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time. Bernd discloses mixing the chemical additives in with the water at the time that bubbles are emitted. This requires keeping the chemical and nozzles to emit the chemicals onboard the ship with the rest of the equipment. Cosentino teaches that it is known to use chemical additives having bubble coalescence retardation properties with bubble diffusers (abstract; Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches that the surfactant (chemical additives) can be coated onto the diffuser before use and then be allowed to dry and set (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches applying the chemical additives to the diffuser by flushing the device with the chemical additive, then draining and allowing the chemical additive and diffuser to dry. It would have been obvious to modify Behrens

and Bernd to include applying the chemical additive to the diffuser before use and allowing it to dry as taught by Cosentino in order to allow the surfactant to act on the bubbles emitted by the diffuser without having to supply the chemical additive directly into the liquid surrounding the diffuser. Although Cosentino teaches flushing the device with the chemical additive and not applying it by dunking in a container the contents of which are the chemical additive, the process of flushing or dunking both achieve the same result of immersing the device in the chemical solvent and it would have been obvious to use dunking instead of flushing. The chemicals added to the diffuser by dunking or flushing would act in the same way once allowed to dry.

With regard to claims 81-82, Cosentino teaches that the chemical additive is a ploy(oxyalkylene) block copolymer composed of EO and PO blocks having the claimed structures and being a pluronic (Column 8, Line 16 to Column 9, Line 30).

With regard to claim 83, Behrens discloses using air bubbles emitted from a diffuser in water for the purpose of suppressing noise in a marine seismic survey (abstract; Column 1, Line 60 to Column 2, Line 16; Columns 4-5). Behrens teaches that the bubbles should not commingle (coalesce) before reaching the surface. Behrens does not disclose that a chemical additive is used with the bubbles generated to block the acoustic waves. Bernd teaches that it is known in the art of blocking acoustic waves in a marine environment to use substantially water-insoluble chemical additives having bubble coalescence retardation properties with a bubble diffuser in order to prevent breakdown and dispersal of a bubble, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time; said chemical additive

being either undiluted or dissolved in alcohol (Column 2; Column 3, Line 18 to Column 6, Line 48). It would have been obvious to modify Behrens to include chemical additives as taught by Bernd in order to prevent breakdown and dispersal of the bubble curtain, thereby keeping bubbles small enough that they rise slowly and stay in an area behind the ship for a long time. Bernd discloses mixing the chemical additives in with the water at the time that bubbles are emitted. This requires keeping the chemical and nozzles to emit the chemicals onboard the ship with the rest of the equipment. Cosentino teaches that it is known to use chemical additives having bubble coalescence retardation properties with bubble diffusers (abstract; Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches that the surfactant (chemical additives) can be coated onto the diffuser before use and then be allowed to dry and set (Column 4, Line 47 to Column 5, Line 26; Column 7, Line 14 to Column 9, Line 30). Cosentino teaches applying the chemical additives to the diffuser by flushing the device with the chemical additive, then draining and allowing the chemical additive and diffuser to dry. It would have been obvious to modify Behrens and Bernd to include applying the chemical additive to the diffuser before use and allowing it to dry as taught by Cosentino in order to allow the surfactant to act on the bubbles emitted by the diffuser without having to supply the chemical additive directly into the liquid surrounding the diffuser. Although Cosentino teaches flushing the device with the chemical additive and not applying it by dunking in a container the contents of which are the chemical additive, the process of flushing or dunking both achieve the same result of immersing the device in the chemical solvent and it would have been

obvious to use dunking instead of flushing. The chemicals added to the diffuser by dunking or flushing would act in the same way once allowed to dry. Cosentino teaches applying up to 10 wt. % of the additive in the specific examples, and therefore does not disclose using 25 wt. % as claimed. However, as taught by Hernd (Column 6), controlling the concentration of the chemical solution can control the properties of the bubbles. It would therefore be obvious to use 25 wt. % of the additive if a higher concentration of chemicals was required to achieve bubbles with certain properties.

With regard to claims 85-86, Cosentino teaches that the chemical additive is a ploy(oxyalkylene) block copolymer composed of EO and PO blocks having the claimed structures and being a pluronic (Column 8, Line 16 to Column 9, Line 30).

Conclusion

The cited prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A. Hughes whose telephone number is 571-272-6983. The examiner can normally be reached on M-F 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAH

JACK KEITH
SUPERVISORY PATENT EXAMINER